

WHAT IS CLAIMED IS:

1. A video recording apparatus comprising:

a TV signal decoding means for converting an input TV signal based on a predetermined TV system into a predetermined digital video signal;

a video encoding means for encoding the digital video signal into a video data stream in a predetermined format;

a recording means for recording the video data stream to a recording medium;

a blanking information detecting means for detecting blanking data included in a predetermined horizontal scan period within a vertical blanking time of each frame of the TV signal; and

a controlling means for encoding the detected blanking data for the video data stream,

the controlling means inserting null data as blanking data into an arbitrary frame in case the video encoding means has inserted one frame into the video data stream in arbitrary timing correspondingly to the fact that the vertical sync period of the video data stream is shorter than that of the TV signal.

2. The apparatus as set forth in claim 1, wherein the controlling means inserts the null data as blanking data into the frame inserted by the video encoding means.

3. The apparatus as set forth in claim 2, wherein:

the predetermined TV signal system stipulates that in case two successive frames have identical control codes stated as blanking data therein, respectively, a control

corresponding to the control code should be done only once at the TV signal decoding means; and

in case a frame having been inserted between the two successive frames having the identical control codes inserted therein, respectively, the controlling means inserts the control code as blanking data into the inserted frame and then null data as blanking data into a frame following the inserted frame.

4. The apparatus as set forth in claim 1, further comprising a TV signal encoding means for converting the digital video signal into a TV signal based on a predetermined TV system and outputting the TV signal resulted from the conversion,

the controlling means inserting null data as blanking data into an arbitrary frame in case the TV signal encoding means inserts one frame into the TV signal in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

5. The apparatus as set forth in claim 4, wherein the controlling means inserts the null data as blanking data into the frame inserted by the TV signal encoding means.

6. The apparatus as set forth in claim 5, wherein:

the predetermined TV signal system stipulates that in case two successive frames have identical control codes stated as blanking data therein, respectively, a control corresponding to the control code should be done only once at the TV signal decoding means; and

in case a frame having been inserted between the two successive frames having

the identical control codes inserted therein, respectively, the controlling means inserts the control code as blanking data into the inserted frame and then null data as blanking data into a frame following the inserted frame.

7. A video recording apparatus comprising:

- a TV signal decoding means for converting a TV signal based on a predetermined TV system into a predetermined digital video signal;

- a video encoding means for encoding the digital video signal into a video data stream in a predetermined format;

- a recording means for recording the video data stream to a recording medium;

- a blanking information detecting means for detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the TV signal; and

- a controlling means for encoding the detected blanking data for the video data stream,

the controlling means deleting, in case the video encoding means encodes the video data stream with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the video data stream is longer than that of the TV signal, one null data from blanking data inserted in a frame following the deleted frame.

8. The apparatus as set forth in claim 7, wherein the controlling means deletes the null data that is the blanking data inserted in the frame following the deleted frame

and is also nearest to the deleted frame, to thereby slide back, frame by frame, positions including from the deleted frame to the frame having included the null data, each frame having the blanking data inserted therein.

9. The apparatus as set forth in claim 7, further comprising a TV signal encoding means for converting the digital video signal into a TV signal based on a predetermined TV system and outputting the TV signal resulted from the conversion,

the controlling means deleting one null data from the blanking data inserted in the frame following the deleted frame in case the TV signal encoding means outputs the TV signal with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

10. The apparatus as set forth in claim 9, wherein the controlling means deletes the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide back, frame by frame, positions including from the deleted frame to the frame having included the null data, each frame having the blanking data inserted therein.

11. A video recording method comprising the steps of:

supplying a TV signal based on a predetermined TV system;

converting the input TV signal into a predetermined digital video signal;

encoding the digital video signal into a video data stream in a predetermined format;

detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the input TV signal;
encoding the detected blanking data for the video data stream; and
recording the video data stream to a recording medium,
for encoding the blanking data for the video data stream, null data being inserted as blanking data into an arbitrary frame in case one frame has been inserted into the video data stream in arbitrary timing correspondingly to the fact that the vertical sync period of the video data stream is shorter than that of the TV signal.

12. The method as set forth in claim 11, wherein the null data is inserted as blanking data into the inserted frame.

13. The method as set forth in claim 12, wherein:

the predetermined TV signal system stipulates that in case two successive frames have identical control codes stated as blanking data therein respectively, a control corresponding to the control code should be done only once at the TV signal decoding means; and

in case a frame having been inserted between the two successive frames having the identical control codes inserted therein, respectively, the control code is inserted as blanking data into the inserted frame and then null data is inserted as blanking data into a frame following the inserted frame.

14. The method as set forth in claim 11, wherein:

the digital video signal is converted into the TV signal based on the

predetermined TV system and the TV signal resulted from the conversion is outputted; and

for outputting the TV signal, null data is inserted as blanking data into an arbitrary frame in case one frame is inserted into the output TV signal in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorted than that of the input TV signal.

15. The method as set forth in claim 14, wherein the null data is inserted as blanking data into the inserted frame.

16. The method as set forth in claim 15, wherein:

the predetermined TV signal system stipulates that in case two successive frames have identical control codes stated as blanking data therein respectively, a control corresponding to the control code should be done only once at the TV signal decoding means; and

in case a frame having been inserted between the two successive frames having the identical control codes inserted therein, respectively, the control code is inserted as blanking data into the inserted frame and then null data is inserted as blanking data into a frame following the inserted frame.

17. A video recording method comprising the steps of:

supplying a TV signal based on a predetermined TV system;
converting the input TV signal into a predetermined digital video signal;
encoding the digital video signal into a video data stream in a predetermined

format;

detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the input TV signal;

encoding the detected blanking data for the video data stream; and

recording the video data stream to a recording medium,

for encoding the blanking data for the video data stream, one null data being deleted from blanking data inserted in a frame following the deleted frame in case the video data stream is encoded with one frame being deleted in arbitrary time correspondingly to the fact that the vertical sync period of the video data stream is longer than that of the TV signal.

18. The method as set forth in claim 17, wherein there is deleted the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide back, frame by frame, positions including from the deleted frame to the frame having included the null data, each frame having the blanking data inserted therein.

19. The method as set forth in claim 17, wherein:

the digital video signal is converted into the TV signal based on the predetermined TV system and the TV signal resulted from the conversion is outputted; and

for outputting the TV signal, one null data is deleted from the blanking data inserted in the frame following the deleted frame in case the TV signal is outputted

with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorted than that of the input TV signal.

20. The method as set forth in claim 19, wherein there is deleted the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide back, frame by frame, positions including from the deleted frame to the frame having included the null data, each frame having the blanking data inserted therein.

21. A video output apparatus comprising:

a TV signal decoding means for converting an input TV signal based on a predetermined TV system into a predetermined digital video signal;

a TV signal encoding means for converting the digital video signal into a TV signal based on a predetermined TV system and outputting the TV signal resulted from the conversion;

a blanking information detecting means for detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the TV signal; and

a controlling means for encoding the detected blanking data for the output TV signal,

the controlling means inserting null data as blanking data into an arbitrary frame in case the TV signal encoding means inserts one frame into the output TV signal in arbitrary timing correspondingly to the fact that the vertical sync period of the output

TV signal is shorter than that of the input TV signal.

22. A video output apparatus comprising:

a TV signal decoding means for converting an input TV signal based on a predetermined TV system into a predetermined digital video signal;

a video encoding means for converting the digital video signal into a video data stream in a predetermined format;

a blanking information detecting means for detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the TV signal; and

a controlling means for encoding the detected blanking data for the output TV signal,

the controlling means deleting, in case the TV signal encoding means outputs a TV signal with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal, one null data from blanking data inserted in a frame following the deleted frame.

23. A video output method comprising the steps of:

supplying a TV signal based on a predetermined TV system;

converting the input TV signal into a predetermined digital video signal;

detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the input TV signal;

converting the digital video signal into a TV signal based on a predetermined TV system and outputting the TV signal resulted from the conversion;

encoding the detected blanking data for the output TV signal,

for outputting the TV signal, null data being inserted as blanking data into an arbitrary frame in case one frame is inserted into the output TV signal in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

24. A video output method comprising the steps of:

supplying a TV signal based on a predetermined TV system;

converting the input TV signal into a predetermined digital video signal;

detecting blanking data included in a predetermined horizontal scan period within the vertical blanking time of each frame of the input TV signal;

converting the digital video signal into a TV signal based on a predetermined TV system and outputting the TV signal resulted from the conversion; and

encoding the detected blanking data for the output TV signal,

for outputting the TV signal, one null data being deleted, in case the TV signal is outputted with one frame being deleted in arbitrary time correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal, from the blanking data inserted in a frame following the deleted frame.